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NAS WHITING FIELD
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LETTER REGARDING REMEDIAL INVESTIGATION FOR SITE 13 NAS WHITING FIELD FL
3/16/1999
U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECT
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

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March 16, 1999

4WD-FFB

Ms. Linda Martin
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
2155 Eagle Drive
North Charleston, South Carolina 29419-9010

SUBJ: RI Report for Site 13

Dear Ms. Martin:

The United States Environmental Protection Agency (EPA) has received and reviewed the Remedial Investigation (RI) Report for Site 13, Sanitary Landfill, at NAS Whiting Field, dated October 1998. Enclosed are EPA's comments based on this review.

If you should have any questions or comments, please contact me at (404) 562-8555.

Sincerely,

A handwritten signature in cursive script, reading "Craig A. Benedikt", is positioned above the typed name.

Craig A. Benedikt
Remedial Project Manager
Federal Facilities Branch

Enclosure

cc: Jim Cason, FDEP

**EPA Review Comments Report for
Remedial Investigation Report for Site 13
Sanitary Landfill
October 1998**

General Comments

1. In Section 5, tables were used to summarize surface and subsurface soil data for Site 13 and to compare maximum detected concentrations to federal and state screening criteria. The screening criteria utilized were EPA Region III Risk-Based Concentrations (RBCs), adjusted to a Hazard Quotient = 0.1, and Florida Department of Environmental Protection residential and industrial soil cleanup goals. It appears that many of the values utilized as screening criteria were rounded. In most instances the rounding would not likely have a significant effect on the evaluation of the data. However, in some instances where the screening criteria value is relatively high, as in the case for aluminum, the rounding is significant. For example, the EPA Region III RBC for aluminum based on an industrial setting is 78,000 milligrams per kilogram (mg/kg). In the tables presented in Section 5, the screening criteria was rounded to 100,000 mg/kg. It is not clear why rounding was utilized. The actual screening values should be used.
2. Surface and subsurface soil data were evaluated for purposes of assessing impacts to human health and ecological receptors through direct contact, ingestion, inhalation, etc. Surface and subsurface soil human health risks were evaluated by comparing maximum concentrations to federal and state soil screening levels for residential and industrial scenarios. In addition, human health and ecological risk assessments were performed. However, no evaluation of the soil data was performed with respect to evaluating the potential for soil contamination to contribute to groundwater contamination. It is recommended that soil screening levels be developed to qualitatively assess the potential for soil contamination to impact groundwater. Screening level development is outlined in the EPA guidance document *Soil Screening Guidance: Users Guide, April 1996, Publication 9355.4-23*. Once screening criteria are developed, a comparison to levels of contamination found at the site should be performed to assess/evaluate the potential for soil contamination to impact groundwater.

Specific Comments

1. **Figure 3-2.** This figure depicts two "WHF-13-CPT-2" locations and no "WHF-13-CPT-1" location. This discrepancy should be corrected.

2. **Page 3-5, Section 3.3, First Paragraph.** This section discusses the locations of and rationale for Phase IIA and IIB surface soil samples. This section states that Phase IIA soil samples were collected at biased sample locations within the landfill itself (at test pit locations). It is stated that because these samples were biased samples based on surface conditions or geophysical anomalies, Phase IIB samples were proposed for collection from random sampling locations along the perimeter of the landfill to confirm the presence or absence of chemicals previously detected in Phase IIA. Given this rationale for the Phase IIB samples, it seems appropriate that the Phase IIB samples would be located at random unbiased locations within the landfill perimeter where contamination would be expected to be the highest. The Phase IIB samples were not collected from the surface of the landfill (ie. within landfill perimeter as determined by geophysical methods) as were the Phase IIA samples. The exact purpose of these samples is unclear. Clarification should be provided to explain the intended use of these samples.

Additionally, this section states that the locations were selected using the systematic sampling method. Sample locations were reportedly selected by randomly identifying a sample location on a transect and collecting additional samples at equidistant intervals along this transect. However, according to Figure 3-2, the Phase II B soil samples (13S001 through S005) do not appear to be equidistant from each other.

3. **Page 4-2, Section 4.2.1, First Paragraph.** This paragraph discusses how precision of analytical data is determined and evaluated. The paragraph states that laboratory duplicates, field duplicates, matrix spike/matrix spike duplicates (MS/MSD) and/or consecutive laboratory control samples are used to evaluate precision. However, this section only discusses results of field duplicate analyses (Table 4-1). A discussion should be provided concerning laboratory duplicates, MS/MSD and/or laboratory control samples as it applies to precision evaluation.
4. **Page 4-2, Section 4.2.1, Fifth Paragraph.** This paragraph indicates that the relative percent difference (RPD) for three volatile organic compounds (VOCs) were not met for sample 35G00101. However, according to Table 4-1 (page 4-6) only 1 VOC (xylene) and two inorganics (thallium and zinc) were not in acceptable ranges. This discrepancy should be addressed.
5. **Figure 5-2.** This figure depicts groundwater potentiometric contours at Site 13. Well WHF-13-45 should be changed to WHF-13-4S.
6. **Page 5-25, Section 5.4, Second Paragraph.** This section describes results of soil gas analyses. This paragraph states that the maximum detection limit for the flame ionization detector was 5,000 parts per million (ppm) and 1,000 ppm for the Organic Vapor Analyzer (OVA). However, an OVA is a flame ionization detector. This discrepancy should be clarified.

7. **Page 5-25, Section 5.4, Fourth Paragraph.** This paragraph states that "current conditions" do not require remedial actions for methane gas generation with respect to Florida Statute 62-701. As noted in Table 5-6, many soil gas sample locations had relatively high detections, with methane concentrations unquantifiable because methane concentrations were above the maximum detection limits of the instruments. In light of these readings, the basis for the conclusion that current conditions do not warrant action should be provided.
8. **Page 5-40, Section 5.5, Fifth Paragraph.** This paragraph discusses results of inorganic analyses in surface soil samples. The paragraph indicates that aluminum, arsenic, iron, and vanadium exceeded EPA Region III RBCs for residential screening values. However, according to Table 5-9, manganese should also be included. This discrepancy should be addressed.
9. **Page 8-6, Section 8.2.2, Sixth Paragraph.** This paragraph discusses fate and persistence characteristics of inorganic contaminants at the site. The report states that elevated concentrations of aluminum and iron in groundwater and soils have been observed at other sites at Whiting Field. Therefore the report concludes that aluminum and arsenic at Site 13 "are" attributable to natural occurrence in the environment rather than waste disposal. As seen in Section 5, Table 5-9, Table 5-11, and Table 5-14, aluminum and iron data were compared to background data for the site. Maximum detected concentrations were found to be above the established background concentrations for these contaminants. Therefore, the conclusion that aluminum and iron are attributable to natural occurrence is not supported by the data. This discrepancy should be clarified.

**Review Comments for the Human Health & Ecological Risk Assessment Sections of the
Final Draft RI Report, Site 13, Sanitary Landfill
October 1998**

GENERAL COMMENTS

1. Region IV has determined that ecological risk assessments (ERAs) that have not been finalized must reflect the ecological risk assessment process outlined in the *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (hereafter referred to as the *Process Document*), which was issued by the Agency in June 1997. Information presented in the *Process Document* supersedes all prior guidance. The ERA for Site 13 does not follow the procedures outlined in the *Process Document* and therefore must be reorganized and revised. The ERA should begin with a site description and identification of complete exposure pathways. The sampling data should then be screening against ecological screening levels only. Those compounds that are present at concentrations greater than ecological screening levels are then addressed in the problem formulation step. It is not until the

problem formulation step that compounds are compared to background levels or identified as essential nutrients. Also, receptors should not be identified until after the ecological screening, since receptors should be selected in part on the basis of the screening results. Refer to the *Process Document* for additional guidance on revising the ERA.

2. The soil screening levels [Beyer, W.N. 1990. Evaluating soil contamination. US. Fish. Wildl. Serv., Biol. Rep. 90(2)] that are used as ecological screening values for Site 13 may not be sufficiently protective of ecological receptors. Region IV is in the process of issuing ecological soil screening levels. The Region IV screening levels were obtained from several sources, including the new levels from the Netherlands, and levels from the Canadian Council of Ministers of the Environment and Oak Ridge National Laboratory. As per Region IV guidance, screening levels used in ERAs that have not been finalized must be comparable to the values that are being adopted. The screening values for three inorganic analytes that are used in the ERA for Site 13 are sufficiently different from those being adopted to request changes in the ERA. The recommended screening value for chromium is 0.4 mg/kg rather than the 100 mg/kg that was used in the ERA, and screening values of 200 mg/kg for iron and 2.0 mg/kg for silver are being adopted. Risks from chromium need to be quantified and a Hazard Quotient (HQ) calculated for all receptors. Iron is present at concentrations greater than the ecological screening level, and iron toxicity should be discussed at greater length. Silver is present at below screening levels and need not be included in the quantitative assessment of risk.
3. An assessment of risks from subsurface soil to ecological receptors is not included in the ERA. Although it is unlikely that birds and mammals will have consequential contact with subsurface soil, it is probable that the root zone of deep-rooted plants such as trees will include subsurface soil. Also, soil invertebrates such as earthworms and ants can be expected to burrow into the subsurface soil. An assessment of risks from contaminants in subsurface soil to these receptor groups should be included in the ERA.
4. The risks to herbivorous birds are not addressed in the ERA. A representative herbivorous bird species should be included as a receptor in the ERA.
5. HQs for contaminants at Site 13 are calculated using the 95% Upper Confidence Limit (UCL) rather than the maximum site concentration. Region IV has determined that 95% UCLs should not be used in ERA. Rather, to show the potential risk at the site, Hazard Quotients (HQs) should be determined using the following combinations: maximum site concentration/NOAEL, average site concentration/NOAEL, maximum site concentration/LOAEL, and average site concentration/LOAEL. For Site 13, the perceived maximum risks are increased less than two-fold if the maximum concentration is used rather than the 95% UCL, and the resulting maximum HQ is less than 3. No changes are requested in the Site 13 ERA regarding to the use of the 95% UCL, but future submittals for other Sites should not use the 95% UCL to calculate risk.

SPECIFIC COMMENTS

1. **Section 7.1, Page 7-2, Line 26.** The text states that water in the "Y" ditch is intermittent and does not provide adequate aquatic habitat to support aquatic receptors. The text does not state whether the water in the "Y" ditch is used by terrestrial receptors at Site 13 for drinking and bathing. The text must provide additional discussion about the water in the "Y" ditch, including some justification for not including this intermittent surface water as a complete potential exposure route.
2. **Section 7.2.2, Page 7-5 and Figure 7-2, Page 7-6.** The Conceptual Site Model (CSM) presented in the ERA is too general. Only three groups of ecological receptors are identified—wildlife, terrestrial plants, and terrestrial invertebrates. As per guidance in the *Process Document*, the CSM should distinguish between exposure routes for different groups of receptors such as herbivorous birds and mammals, primary carnivores/omnivores, and secondary carnivores, and should illustrate the food web that is being modeled. The CSM should be revised.
3. **Section 7.2.2, Page 7-7, Paragraphs 1 and 2.** The text states that dermal adsorption and inhalation are considered negligible exposure pathways. This is true only in comparison with the ingestion exposure pathway. The text should be modified to qualify the statement. Also, the exclusion of the dermal adsorption and inhalation pathways from the ERA should be discussed as a source of uncertainty in the Uncertainty Analysis (Section 7.7).
4. **Section 7.2.2, Page 7.7, Line 12.** The text states that no burrowing animals were observed as Site 13 during characterization. This does not mean that burrowing animals will not inhabit Site 13 in the future, since the area appears to be desirable to ecological receptors. The text should be modified to state that although no burrowing animals were seen at Site 13, the Site does provide acceptable habitat for burrowing animals.
5. **Section 7.2.3, Page 7-7 through 7-9, and Table 7-1, Page 7-8.** The assessment endpoints are not appropriate. The concern regarding plants and soil invertebrates is limited to a reduction in total biomass sufficient to affect wildlife populations. The concerns for small mammals and birds are adverse effects due to the consumption of contaminated food, although the consumption of contaminated soil may prove a greater exposure risk than prey items. The concern for secondary predators is whether bioaccumulating chemicals are present in prey items at sufficient concentrations to cause risk. These endpoints are too general and do not appear to be sufficiently protective of the ecosystem. Assessment endpoints should be specific to the contaminants and receptor groups. It should be possible to draw a conclusion as to whether the endpoint is met (for example, there is no way to assess if the plant and soil invertebrate population has been reduced to a level that affects other organisms). Also, the stated measurement endpoints do not relate to these assessment endpoints. The measurement endpoints are Toxicity

Reference Values (TRVs), the concentration of a compound that causes a toxic response in an individual organism. There is no research relating TRVs to the health of a population. The assessment endpoints should be revised and related to the measurement endpoints. Refer to Section 3.5 of the *Process Document* for guidance.

6. **Section 7.3, Page 7-9, Paragraph 7, and Table 7-2.** The soil screening values [Beyer, W.N. 1990. Evaluating soil contamination. US. Fish. Wildl. Serv., Biol. Rep. 90(2)] that were used as ecological screening values for Site 13 may not be sufficiently protective of ecological receptors. New soil screening guidance, based on new values from the Netherlands, the Canadian Council of Ministers of the Environment, and from Oak Ridge National Laboratory, can be obtained from Region IV.
7. **Figure 7-3 and Table 7-2, Pages 7-10 through 7-13.** The selection process for ecological chemicals of concern has been changed in the *Process Document*. The selection process in this ERA for Site 13 should be revised to be in agreement with the new guidance.
8. **Section 7.4.2, Pages 7-14 through 7-17.** No herbivorous bird species was included as a receptor in the Site 13 model. Herbivorous avian species are found at Site 13 and it is likely that the calculated risks to these species are different than those to the Eastern Meadowlark, which consumes approximately 20% of its diet as plant materials. An herbivorous bird species should be included as a receptor in the ERA.
9. **Table 7-6, Page 7-20.** Footnote 1 states that the bioaccumulation factors (BAFs) for plant material are based on the assumption that plants are 80% water. This assumption applies to berries and leafy vegetables, but does not apply to grains, which have a moisture content of only 10%. Since the diet of the cotton mouse may consist primarily of grains, the risks to the cotton mouse may be underestimated. This source of uncertainty should be discussed in the Uncertainty Analysis (Section 7.7).
10. **Section 7.6.1, Page 7-23, Paragraph 4; Section 7.8, Page 7-26, Paragraph 4; Section 9.1, Page 9-2, Paragraph 11.** The text states that because the Hazard Indices for the short-tailed shrew only slightly exceed 1, population-level sublethal impacts are unlikely. The toxicity data used in this ERA were based on effects on individual organisms. No research is available correlating effects on individuals with impacts on populations. Therefore, no statement correlating individual and population impacts should be made. The text should be revised, and additional discussion of the significance of Hazard Indices greater than 1 should be presented.
11. **Section 7.7, Page 7-24, Paragraph 7.** The text states that risks to amphibians and reptiles species were not estimated because bioaccumulation and toxicity data are lacking. Since quantitative exposure data are not available, a brief qualitative discussion of the anticipated risks to these groups should be included in the Uncertainty Analysis in

addition to the current statement that quantitative risks were not estimated.

12. **Section 9.1, Page 9-2, Paragraph 8.** The text states that surface soil was the only medium of concern in which contaminants of potential concern to ecological receptors were detected. Surface soil was the only medium that was evaluated in the ERA; no discussion of contaminants in other media was presented. The text should be revised.
13. **Appendix D, Groundwater Methodology.** Appendix D presents the groundwater analytical data acquired during the Phase IIB study. By reviewing the reporting limits, it appears that a routine TCL VOC was performed rather than a low level TCL VOC analysis. A low level analysis would be useful for comparison of groundwater data to drinking water standards. Since the Sampling and Analysis Plan for this project was not reviewed, it cannot be determined whether low level VOC analysis was required for the groundwater samples at Site 13.
14. **Table F-9, Page F-15.** The table is titled, "Dermal Dose-Response Data for Noncarcinogenic Effects." However, it appears that the table contains the dose-response data for the inhalation pathway. The table title should be corrected accordingly.
15. **Table F-9, Page F-15.** The table does not include an inhalation RfD for aluminum. However, there is an EPA/NCEA provisional value for aluminum that is available. The provisional inhalation RfD value for aluminum should be included in the table.

SPECIFIC COMMENTS REQUIRING ONLY ACTION TO CORRECT THE DOCUMENT

1. **Page 4-2, 1st full paragraph.** The third sentence states that "The Site 31 Phase IIB soil and groundwater analytical data were validated...". This should be corrected to read "Site 13", not "Site 31".
2. **Section 7.1, Page 7-4, Line 34.** The text states that Coldwater Creek is located approximately 3,000 feet southeast of Site 13. Coldwater Creek could not be located on any of the maps included in this *Remedial Investigation Report*. It is assumed that Coldwater Creek and Big Coldwater Creek are different water bodies. Coldwater Creek should be included and identified on the Site maps in Section 1.
3. **Table 7-2, Pages 7-11 through 7-13.** The header "Ecological Screening Value" is marked with a superscript "6". The correct footnote reference is "5". The Table should be corrected.
4. **Figure 7-2, Page 7-6.** The bullets that appear in various receptor/exposure route boxes are not defined in either the Figure or the text. A definition should be added to the Figure.